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KNEE-SUPPORTING BRACE

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2 Claims. (Cl. 2—24)

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This invention relates to surgical applicances particularly used for supporting the knee joints of athletes and the like, and in particular a brace having bands above and below the knee with the bands hinged together on the joint and with the bands held by a flat spring plate positioned across the outer surface of the knee wherein the combination of the spring with the hinged elements retains the ball and socket joint of the knee in position and prevents the knee going out of joint.

The purpose of this invention is to provide a knee brace for positively preventing accidental separation of the bones of the knee particularly where knees have been weakened through injuries, and which does not interfere with natural movement of the leg.

In the usual type of knee support the supporting elements cause a slight limp and give the appearance of a stiff leg, and for this reason many people with injured knees object to wearing supports. With this thought in mind this invention contemplates a positive brace that permits natural bending and walking action of the knee and that positively prevents the joint parts moving out of their natural positions.

The object of this invention is, therefore, to provide means for forming a knee brace that may readily be positioned over a knee which permits natural knee action and prevents the knee going out of joint.

Another object of the invention is to provide an improved knee brace that may be worn by both men and women and that may be worn without changing the external appearance of garments over the knee.

A further object of the invention is to provide a knee brace that positively holds the knee in position without interfering with natural knee action which is of a simple and economical construction.

With these and other objects and advantages in view the invention embodies a pair of bands hinged together by extended arms and urged toward a straight position by a spring band in slip sockets extended from the bands.

Other features and advantages of the invention will appear from the following description taken in connection with the drawings wherein:

Figure 1 is a view showing the side elevation of the knee brace positioned on a leg with the leg straight.

Figure 2 is a front elevational view showing the brace as illustrated in Figure 1.

Figure 3 is a view similar to that shown in Figure 1 showing the position of the brace with the knee bent.

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Figure 4 is a cross section through the flat spring and socket of the lower band being taken on line 4—4 of Figure 2.

Referring now to the drawings wherein like reference characters denote corresponding parts the improved knee brace of this invention includes an upper band 10, a lower band 11, and a flat steel spring 12.

The bands 10 and 11 are substantially semicircular in shape and the ends are connected with elastic bands 13 and 14, respectively, the band 13 being attached to the ends of the band 10 by stitches or fasteners 15 and the ends of the band 10 being attached to the ends of the band 11 by stitches or fasteners 16.

The bands 10 and 11 may be made of steel, plastic, leather or any suitable material.

Downwardly extended arms 17 and 18 with enlarged plates 19 and 20 on the upper ends are secured to the sides of the band 10 by rivets 21, and similar arms 22 and 23 with enlarged base elements 24 and 25, respectively, are secured to the band 11 by rivets 26. The ends of the arms 17 and 22 are pivotally connected by hinges 27 and the ends of the arms 18 and 23 are similarly connected by hinges 28.

A socket 29, rectangular shaped in cross section and having a flat base 30 is secured to the band 10 by rivets 31, and a similar socket 32 which is provided with a base 33 is secured to the band 11 by rivets 34. The flat steel spring 12 is positioned with the ends extended into the sockets 29 and 32, as illustrated, and when the knee is bent the ends of the spring slide in the sockets, as illustrated in Figure 3.

A semicircular brace 35 is secured to the back of the socket 29 with the ends secured to the arms 17 and 18 by rivets 36, and a similar brace 37, that is secured to the back of the socket 32 is positioned with the ends secured to the arms 22 and 23 by rivets 38.

With the parts arranged in this manner the upper band 10 is positioned around the lower part of the thigh above the knee and the band 10 around the upper part of the calf below the knee. The bands are adjusted so that the hinges 27 and 28 register with the bend point of the knee socket or joint, and with the parts positioned in this manner the knee is free to bend in the usual manner and the bones are positively held in position whereby unnatural movement of the lower end of the bone of the thigh in relation to the upper end of the shin bone is positively prevented.